Instrumentation
Signal Transmission

Course Objectives

1. Explain the role of signal transmission in a simple closed control loop model.
2. Explain four types of signal transmission (pneumatic, electronic, digital, and mechanical) and signal conversion.
3. Describe the role of analog and digital signals in control loops.
4. Identify common types of transducers including: I/P, P/I, I/E, E/I, I/F, F/I, E/F, and F/E.
5. Describe the purpose of common transducers.
6. Describe the operation of common transducers.
7. Describe safety concerns for common transducers.
8. Describe typical malfunctions for common transducers.
9. Identify transmitter drawings on P&IDs.
10. Describe signal scaling calculations (I/P, P/I, I/E, E/I, I/F, F/I, E/F, F/E, and square root to linear signal)

Key Terms (Define the following)

Transducer - _____

_____

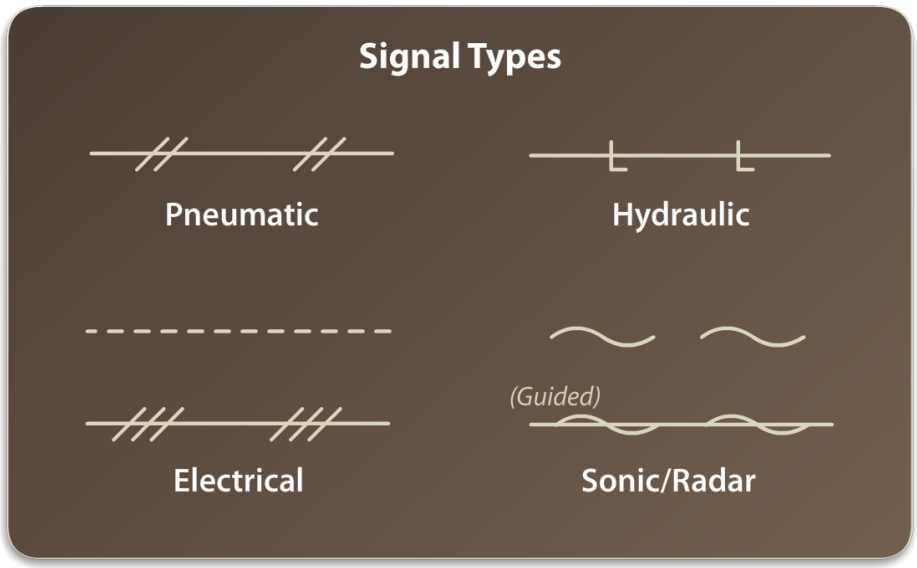
Transmitter - _____

_____

"Smart" transmitter - _____

_____

Principles



Questions

1. Feedback control systems include a process variable signal and a _____ variable signal.

2. The most common signal conversion used in chemical manufacturing is
   - ☐ current to pneumatic
   - ☐ voltage to current
   - ☐ current to frequency
   - ☐ pneumatic to current

3. List the three methods used to maintain signal integrity and reliability.
   1) _____
   2) _____
   3) _____